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ABSTRACT

Describing information gathered from a three-week (1976) tour of environmental education field studies programs in faculties of education and teachers' colleges located in the United Kingdom, the Netherlands, and Western Germany, this report presents comparative program and text summaries and recommends procedures for the Ontario Ministry of Education in Canada. Presented by country, the summaries include: organizational procedures; science, geography, and general environmental texts; program scope; special interests; educational problems frequently referred to in the media; educational environmental topics, concepts, courses, and teacher guides; and the texts used at the secondary level. In general, this report indicates that in these countries, elementary school teaching requires three to four years of preparation at special educational institutes; four to six day field sessions in geography and environmental science during the first and second years of study; and several half-day and one-day field studies in the final year. Recommendations are presented as follows: Ontario student teachers should be involved in a minimum of five days of field studies per year and should receive instruction re: preparation/implementation of day-excursions; and the Ontario Ministry of Education should conduct continuous surveys of foreign educational literature and should encourage school boards to retain or repurchase small rural schools suitable for field studies. (JC)

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ENVIRONMENTAL EDUCATION AND FIELD STUDIES PROGRAMS IN THREE SELECTED N. W. EUROPEAN AREAS

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ENVIRONMENTAL EDUCATION CENTRES FOR SECONDARY SCHOOLS

Project Environment

Neue Geographie

The school outdoor resource area

afie voor het
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Fort Bovisand Underwater Centre

Biologie

RC009506

WALL HALL COLLEGE
· HERTS · WD2 8AT

PÄDAGOGISCHE HOCHSCHULE
WESTFALEN-LIPPE

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Summary

In May 1976 the author conducted a three week study session in a number of carefully selected locations in the United Kingdom, the Netherlands and Western Germany. It was the objective of this tour to observe field studies programs and to discuss environmental education courses at faculties of education and teachers' colleges. In the three countries visited, elementary school teaching requires 3 to 4 years of preparation at special educational institutes.

At the Wall Hall Teachers' College (U.K.) and the Pädagogische Hochschule of Münster (Germany) 4 to 6 day field sessions in geography and environmental science are offered in the first and second years. The field trips are interdisciplinary in nature.

The students are exposed to several half day and one-day field studies in the final year.

A large number of geography and science books were acquired. Summaries of the content and of the environmental education topics of a number of these books are presented in this report. More detailed analyses and comparisons with Canadian texts will appear in article form in professional journals.

A special word of thanks is due to Nipissing College. Without the generous support and encouragement of the members of two faculties this study would not have been possible.

Recommendations resulting from the studies conducted in N.W. Europe:

1. that student teachers at faculties of education and teacher colleges in Ontario be involved in a minimum of 5 days of field studies per academic year.

2. that student teachers at faculties of education and teacher colleges in Ontario receive instruction in the preparation and conducting of day-excursions with groups of children.*

3. that the Ontario Ministry of Education and/or the Ontario Institute for Studies in Education conduct a continuous survey of foreign educational literature and textbooks.

4. that the Ontario Ministry of Education encourage school boards to retain or repurchase small rural schools at locations suitable for field studies.

*references:

Out and about, a teachers' guide to safety and educational visits. Schools Council. Evans/Methuen Educational, London.

Teaching Outdoors, VandenHazel/Benson, Ryerson Science in Action, McGraw-Hill Ryerson, 330 Progress Avenue, Scarborough, Ontario.

The United Kingdom

Institutes visited:

1. Witney Teachers' Centre, Witney, Oxon.
2. Wall Hall Teachers' College, Watford, Hertfordshire.
3. Cuffley Camp Field Studies Centre, Hertfordshire.
4. Fort Bovisand Underwater Centre, Plymouth, S.W. England.

Personnel met:

Clifford Webley, remedial reading consultant, Oxford County Board of Education.

John Robards, teachers' centre warden and science consultant, Oxford County Board of Education.

Miles Baron, senior lecturer environmental education, Wall Hall College, Watford.

Stan King, senior lecturer science education, Wall Hall College, Watford.

Sean Carson, County Adviser for Environmental Education. Hertfordshire County Council, Education Department, Hertford, Herts.

Jerry Hazzard, Director of Coaching, British Sub-Aqua Club, London, England.

Areas of Investigation:

(a) organization and programs of Witney Teachers' Centre.

The Witney Teachers' Centre serves the teachers of a part of Oxford County with audio-visual materials, consultative services and a large number of workshops and courses. The Centre consists of meeting rooms, an audio-visual centre and offices housing consultants and a secretary.

(b) British science, geography and general environmental studies texts.

The contents and environmental education topics of a number of books have been summarized on the pages U.K5,6. More detailed analyses and comparisons with Ontario texts will be published in professional journals.

(c) environmental science courses and field work at Wall Hall Teachers' College.

Three-year certificate courses and four-year B. Ed. degree courses are being offered at Wall Hall College. The following environmental education courses are available:

-Bio-Geography
-Rural Science-Environmental Science-
Applied Biology
-Geography
-Biological Sciences

The main elements of these courses are: World Population, World Food Supplies, Soils, Ecological Planning, Urban Studies and Land Use, Pollution, Ecological Energetics, Food Production and Animal Husbandry, Greenhouse Operation.

In the first and second years of the geography as well as the environmental science courses a 6-day field-studies session is provided along the south coast and in the more central regions of the U.K. In the final year, students are exposed to a number of half-day and one-day field studies sessions.

(d) scope of the field studies program of the Hertfordshire Education Department.

The County of Hertfordshire, with a population of about 1 million, is found north of the City of London. The Education Department of Hertfordshire operates six field centres, each is managed by an advisory teacher with special expertise in field work. Much credit for the outstanding work in environmental education, which places Hertfordshire County amongst the leaders of the world, must be given to Mr. Sean B. McCarson, the County Adviser for Environmental Education. Between them the six Centres offer residential and non-residential programs, covering a range of environmental interests: geographical, historical, and biological.

The courses are organized according to the requirements of each particular school, and the teachers from the school are expected to play a full part, as well as arranging preparatory work and follow-up studies as they are required. The advisory teacher concerned will visit the school to help in planning this.

Each centre has its own special interest:

Centre	location	type of studies
Ashwell	old village school	architectural developments, local history
Barton Turf	pre-fabricated bungalow, North Norfolk coast	village patterns, coastal defences, land reclamation, marsh ecology.
Chorleywood	Non-residential, classrooms available.	land use problems, archeology, regional ecology.
Cuffley	tent camp-cook house-lunchroom-classrooms.	woodland studies, local geology, land use problems.
Hudnall Park	residential, in agricultural area	agriculture, changes in land use, habitat biology.
Stevenage	urban studies centre in a New Town, non-residential.	town planning, urban studies, pedestrian-vehicle conflicts, industrial development.

(e) organization, uses and operation of the Fort Bovisand Underwater Centre.

The Fort Bovisand Underwater Centre is managed by Plymouth Ocean Projects Limited (POP). The centre is located on the outskirts of the city at the Eastern entrance to the Sound. It is housed in a converted 19th century fort. The buildings contain all the necessary back-up facilities for the many training programs. Parts of the fort have been sublet and the activities of the sub-tenants cover student marine field courses in photography, biology, surveying, engineering, research in electronic instrumentation and the manufacture of diver transport vehicles.

It also serves as a National Diving Centre for the British Sub-Aqua Club, and as the sport diving centre for all three military services. As a Field Centre, parts of the fort are used by students of secondary schools and teacher colleges. The Centre provides full board, charges are reasonable and suited to the student's pocket. There are classrooms, projection facilities and other training aids.

Courses available are: marine ecology, estuarine ecology, surveying, marine engineering; scuba diving, canoeing and sailing.

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Problem areas frequently referred to in the communication media:

(a) Dropping enrollment in the primary schools.

(b) Shortage of teaching positions for qualified teachers.

(c) The introduction of comprehensive schools.

(d) The abolition of the 11 plus examinations.

(e) Reductions in the number of colleges of education places.

(f) Gradual reduction of the number of teacher colleges in England and Wales from 165 to 100 or less.

(g) The merging of colleges of education with universities and polytechnical institutes.

The United Kingdom.

Environmental Education Topics in two Field Studies Guides for Teachers.

	New Directions in Geography Teaching. (# 8 , page U.K. - 7 .)	The School Outdoor Resource Area (# 5 ,page U.K. - 7 .)
Basic Content:	Part 1:Teaching Units. -The iron and steel game -The settlement game -Stewart farm- hypothesis testing -Farming in the Sydney region -Accessibility -three related problems -Perception of a local environment -A fresh approach to glaciation -Town development and water supply -Testing explanations of city structure -The interpretation of land use patterns -Investigating the rural environment -Urban field work Part 2:New developments. -Scientific method and quantitative techniques -Models,simulations and games -Field work in school geography -Practical problems -Objectives -Developing the curriculum	1.The value of an outdoor resource area. -A new look at the schoolgrounds -The use of the school estate -The shortage of field studies facilities -Planning of Sites -Site Planting -Maintenance -Community use of schoolgrounds -Vandalism 2.Suggestions for a resource area. -The dual nature of the area -The schoolgrounds as an example of environmental management -The school wildlife area -Encouraging a variety of living things -The pond -The cultivated area -Soil studies -Weather studies -An outdoor craft area -Courtyards and roof gardens 3.Administrative considerations. 4.Curriculum studies and teachers' courses.
Broader environmental education topics referred to in these books:	-the effects of milieu on urban social structure -town development -population distribution -land use patterns -pedestrian counts -values in geographic education	-conservation -microclimates -marsh communities -using pesticides wisely -pollution and lichens -plant succession -woodland communities -nature reserves

Environmental Education Topics in two Field Studies Guides for Teachers.

	Using the Environment Investigations, Part 1 (# 1 , page U.K. - 7)	Using the Environment Investigations, Part 2 (# 2 , page U.K. - 7)
Basic content:	How to conduct investigations. Where shall we go? (on habitats). What is it like?(describing and measuring). What do we mean by mass, weight, force and density? What does it do? (small creatures and their environments). What happens when? Some ways of testing materials. Suggestions for projects. Objectives for children learning science.	How does the weather change? How do plants and animals change? The changing landscape. The children's playground as a centre of interest. Work with birds. Writing about the environment. Objectives for children learning science.
Broader environmental education topics:	-animal adaptations -conservation -effect of environment on animals -testing materials for strength, hardness, effects of heat, elasticity, electrical conduction -habitat characteristics -forces, gravity and density -measurement techniques	-conservation -erosion -life cycles -population growth -rollers, levers and pendulums -stream deposition -tombstone studies -animal behaviour -change and variation -soil movement and mixing -slopes, gradients and friction

The United Kingdom

Literature acquired and investigated.

1. Using the Environment, Investigations part 1, Science 5/13, A Unit for Teachers. Margaret Collis, Macdonald Educational, London and New York, 1974.

2. Using the Environment, Investigations part 2, Science 5/13, A Unit for Teachers, Margaret Collis, Macdonald Educational, London and New York, 1974.

3. Field Work in Urban Geography, K. Briggs, Oliver and Boyd, A Division of Longman Group Limited, Edinburgh EHL 1Y1, 1970.

4. Scotland's Highlands and Islands, Problem Regions of Europe, David Turnock, Oxford University Press, London W.I., 1974.

5. The School Outdoor Resource Area, Project Environment of the Schools Council, R.W. Colton, Longman Group Limited, London, 1974.

6. Out and About, A teacher's guide to safety on educational visits, A Schools Council Publication, Evans-Methuen Educational, London, 1973.

7. Geography and Younger Children, Eric J. Barker, Unibooks, University of London Press Ltd., London EC4P 4AH, 1974.

8. New Directions in Geography Teaching, Edited by R. Walford, Longman Group Limited, London, 1974.

9. Environmental Education, Volume 4, Summer 1975, Editor: Sean Carson, National Association for Environmental Education, 5 Mills Way, Hutton, Brentwood, Essex.

10. Teacher's Groups and Centres, Curriculum Development Working Paper No. 1 , The Schools Council, London, 1967.

11. The Location of Primary Schools, Levin and Bruce, Building Research Station of the Ministry of Public Building and Works, Current Paper 39/68, 1968.

12. "Hitchin Architectural Heritage Year". Environmental Education in the Primary Schools 1975, Hertfordshire County Council, Education Department, Hertfordshire, U.K. 1976.

13. "Review of Environmental Education Developments", Council for Environmental Education, School of Education, University of Reading, Reading RG1 5AQ.

14. "Report of the Schools Committee Working Party on Field Party Leadership", Council for Environmental Education, School of Education, University of Reading, Reading, RG1 5AQ.

15. "European Architectural Heritage Year 1975, A Hertfordshire Record" Hertfordshire County Council, Hertford, U.K.

16. "Environmental Education Centres for Secondary Schools", Hertfordshire County Council, Hertford, U.K. 1975.

17. "Archeology in Hertfordshire, A Handbook for Schools", Hertfordshire County Council, Education Department, Hertford, U.K.

The Netherlands

Teacher Education. *

"Like most education systems, the Dutch education system is undergoing a process of change as a result of new Bills and Acts which govern education at all levels, and especially as a result of the Secondary Education Act of 1963, popularly known as the Mammoth Act.

"After four years at secondary school, girls in the Netherlands can be admitted to a three year nursery training course, and an extra year qualifies them to become head mistress of a nursery school. There are in addition a hundred public and private colleges of education in the Netherlands where young men and women can be trained as primary school teachers after having attended secondary school for at least five years. The course is of three years duration. Dutch colleges of education have no connection with universities.

"It is virtually impossible to give a clear picture of the training of secondary and vocational school teachers, because there are about 235 different diplomas and certificates of proficiency in existence.

"University courses in the Netherlands takes an average of six years and during this time students get a very thorough training in one discipline only, for example English language and literature, leading to the degree of doctorandus (Drs.). This degree confers a teaching qualification provided the graduate has attended lectures on general educational theory for a year, has attended the lectures on teaching methods for his subject and has completed about 60 hours of practice teaching. This is still the only preparation that Dutch university students get for their future careers as secondary school teachers.

"There is a second and much more difficult route to qualify for a secondary school teacher certificate. Mainly mature students are prepared for external examinations in full time or evening courses which may take from four to seven years. It is no exaggeration to say that at present teachers in secondary schools in the Netherlands are teaching their subject at school...without being really equipped for their profession. So it is not surprising that over the years more and more forceful objections have been raised to this extremely unfavourable and undesirable situation, and that these have given rise to the present attempt at renewal and reorganization.

The Future.

"The Colleges of Education (Pedagogische Akademies) are offering their students a steadily improving course of training for their future careers as primary school teachers. There is no doubt that changes are to be expected, but it is not yet apparent at the moment in what direction they will go.

"What the universities do in this area is hardly worthy of the name of training. Those responsible for the education of future secondary school teachers are doing their very best; but theirs is a difficult task because Dutch universities abhor the idea of vocational or professional training.

*abridged from #2, page N-6 .

In 1970 a new non-university teacher training course for secondary school teachers was initiated. The experimental course is based on a report of a state commission, which was published in 1966, but caused such an upheaval in educational circles that it took four years to get the principal recommendations implemented. According to the new training program for secondary school teachers, future teachers will be qualified at one of three levels and student teachers will study two subjects to a level corresponding to one of the three categories. Practical professional training must also form a substantial and compulsory part of the training of teachers.

"By far the most important objective is: the teaching and training of teachers with the intention of developing the attitudes, knowledge and skills that the teacher needs if he is to fulfill his main function, i.e. the support of the pupil in his endeavour to achieve his goals. The new program is to take four or five years and is not carried out by universities but by institutes which cooperate with universities as far as curriculum development, examinations and staff are concerned.

"For the first time in the history of Dutch education a fully integrated, academic and professional training course is offered for secondary school teachers: the teachers are no longer regarded as merely proficient specialists who teach, [illegible] mathematics, but as professionally trained educationists, with mathematics as the area in which they begin the teaching and learning process with their pupils".

General Statistics.**

The Netherlands, population	: 13,000,000
Number of provinces	: 10
Number of teacher-training institutes (Pedagogische Akademies)	: about 100
State-operated P.A.	: 21
Municipal P.A.	: 3
Protestant-christian P.A.	: 27
Roman catholic P.A.	: 38
Non-denominational special P.A.	: 3
Experimental P.A.	: 7
No. of universities offering pedagogy	: 1

Future Shock.

Alvin Toffler has defined future shock as "distress both physical and psychological, that arises from an overload of the human organism's physical adaptive system and its decision-making processes". Future shock may happen when "the familiar psychological cues that help an individual to function in society are suddenly withdrawn and replaced by new ones that are strange or incomprehensible".

** statistics from #5, Page N-6.

In May 1976 I met with educators in the Netherlands who feel unable to cope with the greatly accellerated rate of change in society. The familiar psychological cues that have helped these teachers to function in society are disappearing due to (to them) threatening changes in the value system of society added to a series of educational reforms proposed and implemented by the Ministry of Education and Science.

Although the educational reforms as proposed by the Dutch Ministry of Education may not seem radical from a North American point of view, they have met with opposition by educators and parents. The opposition to the proposed changes in teacher education, school organization and teaching methods can be found recorded in the files of daily newspapers, weekly periodicals and educational journals.

It is no exaggeration to say that a large segment of the Dutch educational profession at the secondary as well as at the tertiary levels feels bewildered, frustrated and disoriented as a result of the rapid changes taking place in what used to be a comfortable environment.

The feeling of insecurity is leading to nervous breakdowns, early retirements and neuroses. The situation is not aided by a constant threat of disruption of schools and colleges by small groups of students, at times supported by marxist teachers.

While in Canada, I wrote to the principals of six teachers' colleges (pedagogische akademies) requesting permission to visit the institutes in order to discuss methods used in the teaching of environmental education topics in science and geography. Only one principal replied stating that at this time visitors could not be welcomed due to the busy schedule of the teaching staff. Subsequent discussions held with students of "pedagogische akademies", a number of school principals and a search of files of journals and periodicals revealed the unhappy state of the educational scene in the Netherlands.

<u>Problem areas</u> frequently referred to in the publication media:

1. Dropping enrollment of pupils in the primary years of the elementary schools.
2. The shortage of teaching positions for recent graduates of teachers colleges.
3. The introduction of comprehensive schools.
4. Numeris fixis, ie. limited admission to certain university faculties.
5. Marxist indoctrination at schools and universities.
6. Democratisation of educational institutes.
7. Parent participation in community schools.
8. The restructuring of elementary, secondary and tertiary education.
9. The need for values education and religious education in schools.

The Netherlands

Geographic Concepts and Environmental Education Topics in two grade 9/10 Geography Texts

Basic geographic ideas outlined in Ontario, Ministry of Education Guideline: Man and the Earth.	thematic-regional approach. Wolthuis et al. (book # 11 , page N - 6)	thematic-regional approach. VandeVen & Barten (book # 10 , page N - 6)
Regionalism	P	P
Areal Differentiation	P	P
Spacial Interaction	P	P
Support of Life	P	P
Resources	P	P
Man the Chooser	-	P
Constant Change	P	P
A Global Viewpoint	-	-
Environmental concerns of the 1970's.	- land reclamation - monoculture - soil erosion - urban planning - regional planning - quality of life - energy - water management	- energy - colonialism - land reclamation - general environmental degradation - urbanization - commuting - land use planning - environmental protection - biosphere - cyclic use of oxygen and carbon dioxide - chemical insecticides - biological insecticides - water pollution - air pollution - noise pollution - nature reserves - emigration and immigration
P - present E - excellently discussed		

The Netherlands

Environmental Education Topics in two Science Texts

	Biologie 1, grade 7 level Kreutzer and Oskamp. (book # 12a,page N - 6) thematic-taxonomic approach.	Biologie 2, grade 8 level Kreutzer and Oskamp. (book # 12b, page N - 6) thematic approach.
Basic contents:	The scientific method in biology. Growth: the cell, cell division. Nutrition:food components. -requirements of plants and mammals. -the parts of plants and their functions. Variety: classification,evolution, -descriptions of various phyla and species. Reproduction: sexual and asexual. -pollination,seeds,fruits,dispersal. -fertilization and development in animals.	Organisms and their environment. Feeding specialization. Interdependence of organisms. Animal bahaviour. Ecosystems and environmental pollution. Heredity. Evolution.
Broader environmental concepts:	-the cyclic use of materials in nature. -energy. -environmental degradation. -insect control,chemical. -nature protection. -industrial pollution. -population problems. -man as a threat to life on planet earth.	-balance of nature. -biological pest controls. -chemical pest controls. -evolution and adaptation. -animal behaviour. -cyclic use of materials on planet earth. -plant and animal communities. -environmental degradation. -environmental protection and legislation. -pyramids of numbers, food webs. -thermal pollution. -monoculture.

The Netherlands

Literature acquired and investigated.

1. Countour of a Future Education System in the Netherlands
   Memorandum by the Ministry of Education and Science, 1975.

2. Secondary School Teacher Training in the Netherlands
   Docinform 300E, Ministry of Education and Science,1974.

3. Organization and Structure of Education in the Netherlands
   Docinform 298E, M.E.S. 1974.

4. Eerste Advies inzake het Innovatieplan Middenschool
   Innovatie Commissie, Middenschool.
   Staats Uitgevery, M.E.S. Den Haag, 1974.

5. Hoger Beroeps Onderwijs,
   Ministry of Education and Science, The Hague, 1976.

6. Weekblad voor Leraren, 8e jaargang, nummer 39, 20 mei, 1976.
   Postbus 407, Dordrecht.

7. Voor Middenschool. 1

   Voor Middenschool. 2
   Informatie voor contactscholen over de middenschool.
   Ministry of Education and Science, The Hague, 1974.

8. De Middenschool by Inez Van Eik
   Aula-Boeken 547, Het Spectrum, Utrecht, 1975.

9. Open Scholen by Herman Frese
   Samson Publishers, Alphen aan den Rijn, 1974.

10. Nieuwe Geographie voor het Voortgezet Onderwijs
    Barten and van de Ven
    Malmberg Publishers, Den Bosch, 1973.

11. Functionele Aardrijkskunde,E. Wolthuis Et Al.
    Wolters-Noordhoff, Groningen, 1971.

12. a) Biologie 1
    b) Biologie 2

    by Kreutzer and Oskamp,
    Wolters-Noordhoff Publisher, Groningen, 1974.

Germany

Institutes visited:

(a) The Geographical Institute of the Faculty of Education at the University of Münster.

(b) Field studies centre (Schullandheim): Meinerzhagen.

Location:

State of Nordrhein-Westfalen,	population: 15,000,000
City of Münster,	population: 230,000
Number of teacher-education institutes	:12
Student population of the Faculty of Education at Münster	:5,000

Personnel met:

Prof. Dr. Herbert Büschenfeld,	professor of geography and geographical education, chairman geographical institute.
Prof. Dr. Karl Engelhard,	professor of geography and geographical education, co-author of textbook series: Welt und Unwelt.
Prof. Dr. Wolfgang Feige,	professor of geography and geographical education, author of geographical pamphlets and articles.
Prof. Dr. Günter Schultz,	professor of pedagogy and teaching methods.
Prof. Dr. Herbert Kersberg,	of the Pädagogische Hochschule Ruhr. co-author of the textbook series Neue Geographie.

Events Observed:

(a) a practice-teaching session at a primary school.
(b) a field study of the old city of Münster.
(c) a field study of a forested area (Teutoburger Wald).
(d) lectures.
(e) class of pupils and program at the residential field centre (Schullandheim) Meinertzhagen.

Areas of investigation:

(a) environmental education topics: see pages G- 3 to G-7.
(b) field studies:
  (a) teacher education: a minimum of 15 days in three years.
    1. three one-day excursions.
    2. at least one extended field study.
  (b) residential field centre:
    1. opportunities are provided to participate in and provide leadership in a field centre.

Teacher Education:

All teacher education takes place at universities. The Abitur (advanced secondary education certificate) is required for admission. Elementary

school teachers are trained at faculties of education (Pädagogische Hochschulen) now all affiliated with universities. Studies take a minimum of three years and lead to the first state examination. After two to five years of practical experience, the second state examination is taken. In other words, permanent appointments follow the successful completion of two state exams and a number of years of successful teaching.

Teachers of Special Education Schools (Sonderschulen) receive additional preparation after having passed the two regular state examinations required for teaching at an elementary school (Volksschule). Special education courses last two years and are given at faculties of education.

Teachers of Realschule (secondary schools) are trained in two ways. Elementary school teachers who have acquired specialization in at least two subjects taught at the Realschule can write a qualifying examination. An alternative method of acquiring the Realschule teaching certificate is by taking a three year university course and additional courses in pedagogy.

Four to six years of university studies are required to teach at the Gymnasium. Teachers must specialize in two or three subjects, pass a state examination and complete a two-year probationary period. The successful writing of a second state examination is then followed by a permanent appointment.

Teachers for the various types of vocational and technical schools are educated for periods ranging from three to five years at universities or technical institutes. A period of practical experience is followed by the first state examination. A one or two-year probationary contract precedes permanent appointment.

Problem areas frequently referred to in the communication media:

(a) Abolition of the ten plus examination, which tended to decide the future of the child at an early age.

(b) The introduction of comprehensive schools. (Gesamtschule)

(c) The abolition of entrance examinations for academic secondary schools, to be replaced by a two year "observation and orientation period" in the fifth and sixth grades.

(d) Dropping enrollment in the primary years of elementary schools.

(e) Shortage of teaching positions for recent graduates of the faculties of education.

Germany

Environmental Education Topics in three Science Texts

	Botany - grade 5 Koch (book # 17, page G - 8)	Botany - grade 6 Koch (book # 18, page G - 9)	Zoology - grade 7/8 Margenthaler (book # 19, page G - 9)
Basic contents:	a factual, thorough discussion of common trees, plants and crops. gardening tips	a factual, thorough discussion of: the grasses, the orchids, the coniferous trees, ferns, horsetails, clubmosses, algae, rusts, mildews, yeasts, bacteria and virusses. the cell, plant metabolism, diffusion, osmosis, photosynthesis, respiration.	a factual, thorough introduction to zoology. the human body: anatomy, metabolic processes, senses, nervous system, reproduction. animal classification. mammals, birds, reptiles, amphibians, fish, insects, invertebrates, protozoa.
Broader environmental education concepts:	landscape protection. composting. plant adaptation. trees for urban streets and plazas.	trees and coal formation. food losses due to insects and plant diseases. plant communities. environmental conditions affecting plant growth. major world biomes. tropical food crops. the protection of nature. endangered species. nature reserves.	ocean fisheries. winter survival of mammals. wildlife protection. nature reserves. endangered species. geographic distribution of animals. major world biomes. animal behaviour. evolution. forest communities. tundra " steppe " desert " ocean "

Germany

Environmental Education Topics in Three German Textbooks

Topics and skills listed in Education in the Primary and Junior Divisions, Ontario Ministry of Education	Sachbuch 1st and 2nd year (book #5, page G- 8)	Sachbuch 3rd year (book #6, page G- 8)	Sachbuch 4th year (book #7, page G- 8)
Home and family	Home and family life. Parents plan and save.	Use of leisure time, travelling methods.	Forms of recreation Travel and learning.
Exploring your block	Neighbours, water, light		
Health and hygiene Diet and nutrition	Teeth, dental hygiene, food, digestive system, growth.	Medicine, first aid. Human reproduction.	Drinking water. War and disease.
Changes - physical	Autumn theme.	Sound and hearing. Dissolving salt.	Land use, industry. Transportation.
- cultural	Costumes and buildings. Occupational changes.	Changes in communication travel and recreation.	Shopping patterns Urban planning.
- social	Changes in family make-up. Playgrounds and parks.	Changes in building styles, occupations.	The sports complex. Guest workers.
- technological	Changes in bridge designs and home construction.	Household goods. Milk production & distrib.	Animal farms. Bakeries, textile ind.
- in the natural world	The seasons. The Weather	The Weather, maps.	Decay, autumn. Weather maps, symbols.
Man as the initiator of change	Changes in farming and in urban design.	Urban transportation	Pollution Space travel.
Community studies	Living as neighbours. Studying stores and businesses.	Using the mail, the railways. The police.	Fire protection. Sewage treatment.
Values-urban degradation	Noise pollution, sight pollution.	Traffic problems.	Air pollution. Water pollution.
- rural degradation			Water pollution. Garbage disposal.
Area studies	Trees, birds, migration Meadows, mapping routes.	Recreation areas. Transp. & the community	Rural areas, nature reserves.
Activities	Growing plants. Raising guinea pigs. Studying properties of: rubber, glass, wood, steel, paper, water and ice, candles, light, water, electricity. Time and calendars. Home lighting and heating. Costumes around the world. Floating and sinking.	Class elections. Studying water supply and water uses. Visiting markets, Map and compass use. Growing houseplants. Starch test. Observing fish, plants, trees, birds, water. Conduction of heat.	Maps, contours, seeds, Studying dogs, trees, balance of nature, plant-growth, frogs, X-rays, the systems of the human body. Origin of rocks. Water-ice-vapor. Energy. Weighing, gravity.

Germany.

Geographic Concepts and Environmental Education Topics in four grade 6/7 Geography Texts.

Basic geographic ideas outlined in Ontario, Ministry of Education Guideline: Man and the Earth.	thematic approach	thematic-regional approach	thematic and regional-economic approach	traditional regional-economic approach (gr. 6 only)
	Hausmann-Engelhard (book # 2)	Kersberg et al. (book # 8)	Grotelüschen et al. (book # 13)	Hausmann (book # 27)
Regionalism	P	P	P	P
Areal Differentiation	P	P	P	P
Spatial Interaction	P	P	P	P
Support of Life	P	P	P	P
Resources	E	P	E	P
Man the Chooser	P	P	P	P
Constant Change	E	E	P	
A Global Viewpoint	P	P	P	
Environmental concerns of the 1970's :	-man invokes natural disasters -population distribution and densities -travel and recreation -resources and energy -natural disasters -deforestation -urban recreation -salination -land reclamation -transportation analyses -changes in land use -water conservation -major world foodcrops -world communications	-waste water,air poll. -chemical poisons -garbage disposal -land reclamation -deforestation -soil erosion -assistance to developing countries -recreation -guest workers -landscape protection -nature reserves -commuting -envir. protection -energy - types of human shelter - changes in land use -global interdependance -urban living -man changing the face of the earth -natural disasters -planet earth concept	- reforestation - irrigation -population densities -developing countries -monoculture -spacetravel -nature reserves -floating fish factories -land reclamation -energy	-sources of energy -tourism

P - present

E - excellently discussed

Germany

Geographic Concepts and Environmental Education Topics in four grade 7/8 Geography Texts.

Basic geographic ideas outlined in Ontario, Ministry of Education Guideline: Man and the Earth	largely thematic approach	thematic-regional approach	regional-thematic approach	traditional regional-economic approach.
	Hausmann-Engelhard (book # 3, G-8)	Buck (book # 11, G-8)	Mersberg (book # 9, G-8)	Grotelüschen (book # 14, G-8)
Regionalism	P	P	P	P
Areal Differentiation	P	P	P	P
Spatial Interaction	P	P	P	P
Support of Life Resources	P	P	P	E
Man the Chooser	P	P	P	P
Constant Change	E	E	P	P
A Global Viewpoint	P	P	P	P
environmental concerns of the 1970's	-refugee problems -changes in land use -urban commuting -social, religious and racial conflicts -town surveys -illiteracy and development -UNESCO aid -needs of dev'g countries -town planning -energy and economic dev't.	-spaceship earth concept -racial conflicts -man's interference with ecological relationships -changes in land use -energy -travel planning -population density -needs of developing countries	-commuting -colonialism -energy of moving water -environmental degradation and human health -religion, tradition and progress -travel planning -water conservation and distribution -population density -needs of developing countries	-water needs -irrigation -salination -colonialism -nature reserves -energy and power -needs of developing countries.

P - present
E - excellently discussed

Germany

Geographic Concepts and Environmental Education Topics in four grade 9/10 Geography Texts.

Basic Geographic Ideas outlined in Ontario, Ministry of Education Guideline: Man and the Earth	thematic approach	thematic approach	thematic approach	thematic regional-economic approach.
	Hausmann-Engelhard (book # 4)	Buck et al. (book # 12)	Kersberg et al. (book # 10)	Grotelüschen et al. (book # 15)
Regionalism	P	P	P	P
Areal Differentiation	P	P	P	P
Spatial Interaction	P	P	P	P
Support of Life	P	P	P	P
Resources	P	P	P	E
Man the Chooser	E	E	E	P
Constant Change	P	P	P	P
A Global Viewpoint	P	P	P	P
Environmental concerns of the 1970's:	-population explosion -post-industrial societies -energy -developing countries -land reform and redistribution -consequences of industrialisation -planning the future of spaceship earth -commuting and migrating -planning urban development -choosing locations for industries -noise, air and water pollution. -soil destruction -global windpatterns -landscape protection -ecosystems protection	-waste water -land reform -urban redevelopment -energy -population depsities -population explosion -noise pollution -citizen participation -air pollution and legislation -chemical pollution -helping developing countries -recreational areas -commuting -guestworkers and migrants -urban and regional planning -envir. protection -land speculation -the automobile and the inner city -loosing agric.land	-waste disposal -urban planning -population explosion -land reform -public participation -needs of underdeveloped nations -family planning -recreation & tourism -water pollution -general environmental degradation -balance of nature -temperature inversion -continental drift -urban conglomerations -monoculture -ecosystems -racism -regional planning -adventure playgrounds -energy -urban redevelopment	-energy -water pollution -air pollution -land reform -population density -recreation, tourism -family planning -pedestrian zones -birth control -nourishing mankind -(neo)colonialism -landscape protection -noise pollution -fertilizers -monoculture -garbage disposal -nature reserves -commuting and traffic problems -pesticides -town planning -world food crops -needs of developing countries

P - present

E - excellently discussed

WESTERN GERMANY

Literature acquired and investigated

1. Unsere Welt, Grundschulatlas Nordrhein-Westfalen
   by Mayer and Wagner,
   Verlagsgesellschaft Cornelsen-Velhagen & Klasing, Bielefeld.

2. Welt und Umwelt, Schuljahr 5/6, Lehrerausgabe,
   by Hausmann, Engelhard et al., Westermann Verlag, Braunschweig.

3. Welt und Umwelt, Schuljahr 7/8,
   by Hausmann, Engelhard et al., Westermann Verlag, Braunschweig.

4. Welt und Umwelt, Schuljahr 9/10
   by Hausmann, Engelhard et al., Westermann Verlag, Braunschweig.

5. Sachbuch, 1/2 Schuljahr, Ein Arbeitsbuch für den Sachunterricht der Grundschule,
   Oldenbourg Verlag, München

6. Sachbuch, 3 Schuljahr, Ein Arbeitsbuch für den Sachunterricht der Grundschule,
   Oldenbourg Verlag, München

7. Sachbuch, 4 Schuljahr, Ein Arbeitsbuch für den Sachunterricht der Grundschule,
   Oldenbourg Verlag, München

8. Neue Geographie, 5/6 Schuljahr,
   by Kersberg et al, Bagel Verlag, Düsseldorf

9. Neue Geographie, 7/8 Schuljahr
   by Kersberg et al, Bagel Verlag, Düsseldorf

10. Neu Geographie, 9/10 Schuljahr
    by Kersberg et al, Bagel Verlag, Düsseldorf

11. Geographie, 7/8 Schuljahr
    by Buck et al, Ernst Klett Verlag, Stuttgart

12. Geographie, 9/10 Schuljahr
    by Buck et al. Ernst Klett Verlag, Stuttgart

13. Dreimal um die Erde, 5/6 Schuljahr, Band 1.
    By Grotelüschen et al, Verlag Velhagen, Klasing und Schroedel, Bielefeld

14. Dreimal um die Erde, 7/8 Schuljahr, Band 2,
    by Grotelüschen et al, Verlag Velhagen, Klasing und Schroedel, Bielefeld

15. Dreimal um die Erde, Band 3.,
    by Grotelüschen et al, Verlag Velhagen, Klasing und Schroedel, Bielefeld

16. Erdkundeunterricht, 7/8 Schuljahr,
    Lehrerband zum Unterrichtswerk Dreimal um die Erde
    by Grotelüschen et al, Velhagen Verlag, Bielefeld

17. Pflanzenkunde Band 1.,
    by Koch, Moritz Diesterweg Verlag, Frankfurt am Main

WESTERN GERMANY - Literature acquired and investigated. G-9

18. Pflanzenkunde Band 2.
by Koch, Moritz Diesterweg Verlag, Frankfurt am Main

19. Tierkunde,
by Mergenthaler, Moritz Diesterweg Verlag, Frankfurt am Main

20. Facts About Germany, Press and Information Office of the Government of the Federal Republic of Germany, Bonn, 1975

21. Pädagogische Hochschule - Westfalen-Lippe,
Personal- und Vorlesungsverzeichnis,
Sommersemester 1976

22. Geographische Rundschau, Februar 2 - 1970
Westermann Verlag

23. Geographie im Unterricht, April 1976
Aulis Verlag, Deubner & Co., KG, Köln

24. Lehrer-Fortbildung,
Sozialgeographie im Unterricht der Grund- und Hauptschule
Landesinstitut für Schulpadagogische Bildung, Düsseldorf,1974

25. Blickpunkt Braunkohle, Rheinische Braunkohlenwerke Aktiengesellschaft, Köln

26. Neues Ackerland Folget Dem Tagebau,
Landwirtschaftliche Rekultivierung der Rheinische Braunkohlenwerke, AG, Köln

27. Erdkunde 1, W. Hausmann,
R. Oldenbourg Verlag, Münster.